A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C08F210/06 C08F4/642

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 644 206 A (SHOWA DENKO KK) 22 March 1995 (1995-03-22) examples 1-23 tables 1-4 claims 1-10	1-6,8,16
X	US 2003/092563 A1 (GAO XIAOLIANG ET AL) 15 May 2003 (2003-05-15) examples S1,S2,S6,S8,S11,S13 examples 2,3,15,22,27,31 table 2	1-6,8, 16,18,19
A	US 2001/051587 A1 (WILLIAMS DARRYL STEPHEN) 13 December 2001 (2001-12-13) examples 1-12 claims 1-20	1-4,16

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
4 August 2005	12 3 AUG 2005

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Parry, J

4

Form PCT/ISA/210 (second sheet) (January 2004)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BOTT R K J ET AL: "Monocyclopentadienyl phenoxy-imine and phenoxy-amine complexes of titanium and zirconium and their application as catalysts for 1-alkene polymerisation" JOURNAL OF ORGANOMETALLIC CHEMISTRY, ELSEVIER-SEQUOIA S.A. LAUSANNE, CH, vol. 665, no. 1-2, 3 January 2003 (2003-01-03), pages 135-149, XP004401808 ISSN: 0022-328X page 136; compounds 1A-1C page 137; compounds 4A-5C tables 6,7 page 143 - page 147; compounds 1A-1C,4A-5C	1-4,6-8, 12,14, 16,17
X	WO 00/32653 A (NOVA CHEMICALS S.A; SPENCE, RUPERT, EDWARD, VON, HAKEN; KOCH, LINDA;) 8 June 2000 (2000-06-08) page 14 - page 19; example examples claims 1-10 page 23; table 2	1-4,6-8, 16,18,19
X	EP 0 874 005 A (MITSUI CHEMICALS, INC) 28 October 1998 (1998-10-28) page 80; compounds L25,L29,L30 page 120 - page 121; compounds A-25,B-25 page 125 - page 128; compounds A-29,B-29,A-30,B-30 page 145; examples 91-94,107-111 claims 1-28	1-7,12, 14,16-19
A	ISHII S ET AL: "ZIRCONIUM COMPLEXES HAVING PHENOXY/CYCLOALKYLIMINE CHELATE LIGANDS FOR THE POLYMERIZATION OF ETHYLENE FOR VINYL-TERMINATED LOW MOLECULAR WEIGHT POLYETHYLENES" CHEMISTRY LETTERS, CHEMICAL SOCIETY OF JAPAN. TOKYO, JP, vol. 7, 2002, pages 740-741, XP009007498 ISSN: 0366-7022 the whole document	1-4,6,7, 16
X	EP 0 990 664 A (MITSUI CHEMICALS, INC) 5 April 2000 (2000-04-05) synthesis examples 1-10 examples 1-25 claims 1-11	1-7,12, 14,16-19

-/--

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FELDMAN J ET AL: "ELECTROPHILIC METAL PRECURSORS AND A BETA-DIIMINE LIGAND FOR NICKEL(II)- AND PALLADIUM(II)-CATALYZED ETHYLENE POLYMERIZATION" ORGANOMETALLICS, WASHINGTON, DC, US, vol. 16, no. 8, 1997, pages 1514-1516, XP000979824 ISSN: 0276-7333 page 1516, left-hand column page 1515, right-hand column; compound 5	1,2,7,16
X	MARTIN A ET AL: "NEUTRAL AND CATIONIC GROUP 4 METAL COMPOUNDS CONTAINING OCTAMETHYLBIDBENZOTETRAAZAANNULENE (ME8TAA2-)LIGANDS. SYNTHESIS ANDREACTIVITY OF (ME8TAA)MX2 AND (ME8TAA)MX+ COMPLEXES (M = ZR, HF; X = C1, HYDROCARBYL, NR2, OR)" ORGANOMETALLICS, WASHINGTON, DC, US, vol. 17, no. 3, 1998, pages 382-397, XP000979823 ISSN: 0276-7333 page 384; compounds 3C,3D page 396	1-5,7, 16,18,19
X	EP 0 881 233 A (NOVA CHEM INT SA) 2 December 1998 (1998-12-02) comparative examples 5,7	1-3,8, 16,18,19
A	WO 96/13529 A (DSM N.V; VAN BEEK, JOHANNUS, ANTONIUS, MARIA; VAN DOREMAELE, GERARDUS,) 9 May 1996 (1996-05-09) examples I-LVI claims 1-15	1-4,6, 10,11,16
X	WO 02/070569 A (STICHTING DUTCH POLYMER INSTITUTE; KRETSCHMER, WINFRIED, PETER) 12 September 2002 (2002-09-12) preparations 1-6,9 examples 11-15,19-24,32-36	1-4,6,7, 16,18,19
X	CA 2 243 726 A1 (NOVA CHEMICALS LTD) 21 January 2000 (2000-01-21) page 18 page 17 - page 31; examples 1-16 page 37; tables c1,c2 claims 1-17	1-4,6,7, 16,18,19
A	WO 02/16374 A (BOREALIS TECHNOLOGY OY; CAMPBELL, NEIL; ANDELL, OVE; MAARANEN, JANNE;) 28 February 2002 (2002-02-28) page 12 examples 5-10,12,13,15,16,19 page 43 - page 44; tables 1-5 claims 1-25	1-4,6,7, 10,11,16

4 -/--

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 940 408 A (BAYER AKTIENGESELLSCHAFT) 8 September 1999 (1999-09-08) examples 3,6,8,10-12 examples 14-25 claims 1-13	1-4,6, 9-11,16
A	EP 1 026 180 A (BASELL POLYOLEFINE GMBH) 9 August 2000 (2000-08-09) examples 1-8 claims 1-7	1-4,6,9, 16
A	US 6 555 634 B1 (KLOSIN JERZY ET AL) 29 April 2003 (2003-04-29) examples 1-16 claims 1-8 column 11, line 15 - line 40	1-4,6, 10,11,16
A	US 2003/004286 A1 (KLOSIN JERZY ET AL) 2 January 2003 (2003-01-02) examples 1-12 claims 1-10 column 9, paragraph 173	1-4,6, 10,11,16
X	WO 97/02298 A (E.I. DU PONT DE NEMOURS AND COMPANY; JOHNSON, LYNDA, KAYE; FELDMAN, JE) 23 January 1997 (1997-01-23) page 31 - page 32; examples 2,3 page 34 - page 37; examples 7-10,12-14 page 55 - page 69; examples 108,109,117-119,130-146 page 78 - page 87; examples 181,203-208	1,2,5,7, 12,14-19
X	WO 98/46651 A (MASSACHUSETTS INSTITUTE OF TECHNOLOGY) 22 October 1998 (1998-10-22) examples 1-34	1-4,8, 12-14, 17-19
A	WO 98/45039 A (THE REGENTS OF THE UNIVERSITY OF CALIFORNIA; WATKIN, JOHN, G; CLICK, D) 15 October 1998 (1998-10-15) page 53	1-15
P,X	US 2003/181317 A1 (TAGGE CHRISTOPHER D ET AL) 25 September 2003 (2003-09-25) column 12 - column 13 examples 1-5 claims 1-36	1-4,6-8, 16,17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2004/008709

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6 (partly), 8 (partly),16 (partly)

Polymerisation process in the presence of an borate cocatalyst and a catalyst comprising a composition of a metal-organic reagent, a spectator ligand and optionally a hydrocarbylating agent where the spectator ligand is not defined as in claims 7,9,10,12 or 14. Polymer obtainable with such a process.

---

2. claims: 1-6 (partly), 7, 8(partly), 1 (partly)

Polymerisation process in the presence of an borate cocatalyst and a catalyst comprising a composition of a metal-organic reagent, a spectator ligand and optionally a hydrocarbylating agent where the spectator ligand is as defined in claim 7. Polymer obtainable with such a process.

---

3. claims: 1-6 (partly), 8 (partly), 9, 11 (partly), 16 (partly)

Polymerisation process in the presence of an borate cocatalyst and a catalyst comprising a composition of a metal-organic reagent, a spectator ligand and optionally a hydrocarbylating agent where the spectator ligand is as defined in claim 9. Polymer obtainable with such a process.

---

4. claims: 1-6 (partly), 8 (partly), 1, 11 (partly), 16 (partly)

Polymerisation process in the presence of an borate cocatalyst and a catalyst comprising a composition of a metal-organic reagent, a spectator ligand and optionally a hydrocarbylating agent where the spectator ligand is as defined in claim 10. Polymer obtainable with such a process.

---

5. claims: 1-6 (partly), 8 (partly), 12, 13, 16 (partly), 17-19

Polymerisation process in the presence of an borate cocatalyst and a catalyst comprising a composition of a metal-organic reagent, a spectator ligand and optionally a hydrocarbylating agent where the spectator ligand is as defined in claim 12. Polymer obtainable with such a process.

---

6. claims: 1-6 (partly), 8 (partly), 14, 15, 16 (partly)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Polymerisation process in the presence of an borate cocatalyst and a catalyst comprising a composition of a metal-organic reagent, a spectator ligand and optionally a hydrocarbylating agent where the spectator ligand is as defined in claim 14. Polymer obtainable with such a process.

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0644206	A	22-03-1995	DE	69407522 D1	05-02-1998
			DE	69407522 T2	14-05-1998
			EP	0644206 A1	22-03-1995
			JP	7133306 A	23-05-1995
US 2003092563	A1	15-05-2003	CA	2334049 A1	02-08-2002
US 2001051587	A1	13-12-2001	BR	0107599 A	19-11-2002
			CA	2395710 A1	19-07-2001
			CN	1394212 A ,C	29-01-2003
			JP	2003529631 T	07-10-2003
			WO	0151528 A1	19-07-2001
WO 0032653	A	08-06-2000	CA	2254841 A1	26-05-2000
			AU	6457399 A	19-06-2000
			WO	0032653 A1	08-06-2000
			EP	1135421 A1	26-09-2001
			US	6234950 B1	22-05-2001
EP 0874005	A	28-10-1998	CA	2235905 A1	25-10-1998
			CN	1199052 A	18-11-1998
			DE	69816514 D1	28-08-2003
			DE	69816514 T2	22-04-2004
			EP	0874005 A1	28-10-1998
			JP	3530020 B2	24-05-2004
			JP	11315109 A	16-11-1999
			JP	2004076016 A	11-03-2004
			TW	420693 B	01-02-2001
			US	2005124771 A1	09-06-2005
			US	6309997 B1	30-10-2001
			US	2002055600 A1	09-05-2002
			US	2002115557 A1	22-08-2002
EP 0990664	A	05-04-2000	EP	0990664 A1	05-04-2000
			US	6399724 B1	04-06-2002
			CN	1263538 A ,C	16-08-2000
			WO	9954364 A1	28-10-1999
			TW	562810 B	21-11-2003
EP 0881233	A	02-12-1998	CA	2206944 A1	30-11-1998
			AT	229986 T	15-01-2003
			AU	727947 B2	04-01-2001
			AU	6373198 A	03-12-1998
			BR	9801712 A	23-11-1999
			CN	1438251 A ,C	27-08-2003
			CN	1201042 A ,C	09-12-1998
			DE	69810190 D1	30-01-2003
			DE	69810190 T2	11-09-2003
			EP	0881233 A1	02-12-1998
			ES	2189092 T3	01-07-2003
			FI	981073 A	01-12-1998
			JP	10338706 A	22-12-1998
			NO	982460 A	01-12-1998
			RU	2203905 C2	10-05-2003
			US	6342463 B1	29-01-2002
			US	6063879 A	16-05-2000
WO 9613529	A	09-05-1996	AT	164858 T	15-04-1998

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9613529 A		AU 3817595 A	23-05-1996
		BR 9509457 A	06-01-1998
		CA 2203879 A1	09-05-1996
		CN 1171794 A	28-01-1998
		DE 69502028 D1	14-05-1998
		DE 69502028 T2	10-12-1998
		EP 0789718 A1	20-08-1997
		ES 2116776 T3	16-07-1998
		FI 971823 A	27-06-1997
		JP 10508055 T	04-08-1998
		WO 9613529 A1	09-05-1996
		NO 971843 A	26-06-1997
		RU 2135522 C1	27-08-1999
		US 5986029 A	16-11-1999
WO 02070569 A	12-09-2002	AT 277092 T	15-10-2004
		CA 2439892 A1	12-09-2002
		CN 1494555 A ,C	05-05-2004
		DE 60201340 D1	28-10-2004
		DE 60201340 T2	17-02-2005
		EP 1373332 A1	02-01-2004
		ES 2224049 T3	01-03-2005
		JP 2004527608 T	09-09-2004
		WO 02070569 A1	12-09-2002
		US 2004192541 A1	30-09-2004
CA 2243726 A1	21-01-2000	AT 228141 T	15-12-2002
		AU 4126399 A	14-02-2000
		BR 9912316 A	08-05-2001
		WO 0005236 A1	03-02-2000
		CN 1319103 A ,C	24-10-2001
		DE 69904061 D1	02-01-2003
		DE 69904061 T2	17-07-2003
		EP 1112276 A1	04-07-2001
		ES 2187161 T3	16-05-2003
		JP 2002521500 T	16-07-2002
		US 6355744 B1	12-03-2002
WO 0216374 A	28-02-2002	AT 278697 T	15-10-2004
		AU 8229701 A	04-03-2002
		DE 60106277 D1	11-11-2004
		DE 60106277 T2	24-02-2005
		EP 1311513 A1	21-05-2003
		WO 0216374 A1	28-02-2002
		US 2003225275 A1	04-12-2003
EP 0940408 A	08-09-1999	DE 19809159 A1	09-09-1999
		CA 2263185 A1	04-09-1999
		EP 0940408 A1	08-09-1999
		JP 11315089 A	16-11-1999
		US 6248912 B1	19-06-2001
EP 1026180 A	09-08-2000	DE 19903695 A1	03-08-2000
		EP 1026180 A1	09-08-2000
		JP 2000313713 A	14-11-2000
US 6555634 B1	29-04-2003	AU 3764600 A	05-12-2000
		CA 2368111 A1	23-11-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6555634 B1		DE 60001558 D1	10-04-2003
		DE 60001558 T2	08-01-2004
		EP 1178997 A1	13-02-2002
		JP 2002544282 T	24-12-2002
		WO 0069871 A1	23-11-2000
US 2003004286 A1	02-01-2003	US 6515155 B1	04-02-2003
		AU 2003228452 A1	10-11-2003
		CA 2483326 A1	06-11-2003
		EP 1501843 A1	02-02-2005
		WO 03091265 A1	06-11-2003
		US 2002165329 A1	07-11-2002
		AU 1773901 A	18-06-2001
		BR 0016487 A	27-08-2002
		CA 2393793 A1	14-06-2001
		CN 1409729 A	09-04-2003
		CN 1495188 A	12-05-2004
		EP 1242471 A1	25-09-2002
		EP 1253158 A1	30-10-2002
		JP 2003516420 T	13-05-2003
		JP 2003104995 A	09-04-2003
		NO 20022741 A	15-07-2002
		NO 20023403 A	15-07-2002
		WO 0142315 A1	14-06-2001
		ZA 200204069 A	22-05-2003
		ZA 200303941 A	11-02-2004
WO 9702298 A	23-01-1997	US 5714556 A	03-02-1998
		AT 281479 T	15-11-2004
		AU 703202 B2	18-03-1999
		AU 6404096 A	05-02-1997
		BR 9609635 A	18-05-1999
		CA 2225246 A1	23-01-1997
		CN 1194653 A ,C	30-09-1998
		CN 1508160 A	30-06-2004
		CZ 9704158 A3	17-06-1998
		DE 69633783 D1	09-12-2004
		EP 1475394 A2	10-11-2004
		EP 0835269 A1	15-04-1998
		JP 11508635 T	27-07-1999
		KR 264464 B1	16-08-2000
		NO 976120 A	02-03-1998
		NZ 312496 A	30-08-1999
		PL 324338 A1	25-05-1998
		TR 9701709 T1	21-04-1998
		WO 9702298 A1	23-01-1997
		US 6103920 A	15-08-2000
WO 9846651 A	22-10-1998	US 5889128 A	30-03-1999
		AU 6970998 A	11-11-1998
		CA 2285964 A1	22-10-1998
		DE 69810605 D1	13-02-2003
		DE 69810605 T2	08-05-2003
		EP 0975579 A2	02-02-2000
		JP 2001520696 T	30-10-2001
		WO 9846651 A2	22-10-1998
		US 6316555 B1	13-11-2001
		US 2004138324 A1	15-07-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9846651 A		US 2002111442 A1	15-08-2002
WO 9845039 A	15-10-1998	AU 6953898 A	30-10-1998
		WO 9845039 A1	15-10-1998
		US 6335303 B1	01-01-2002
US 2003181317 A1	25-09-2003	US 6544919 B1	08-04-2003
		AU 7997100 A	10-05-2001
		WO 0125298 A1	12-04-2001